

# ICDF *facts*

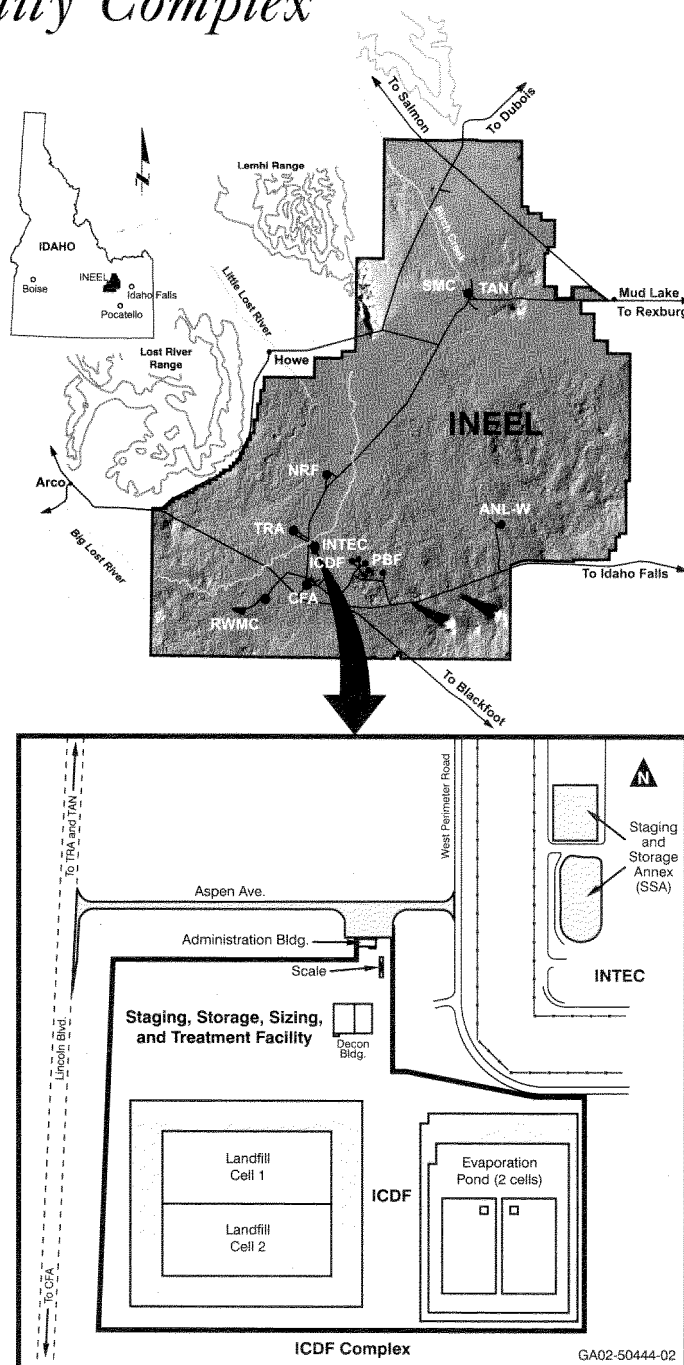


## *Update on the INEEL CERCLA Disposal Facility Complex*

### **Introduction**

The U.S. Department of Energy, U.S. Environmental Protection Agency, and State of Idaho (the Agencies) have completed the design of a disposal facility for contaminated soil and debris at the Idaho National Engineering and Environmental Laboratory (INEEL) under the Federal Facility Agreement and Consent Order. The purpose of the facility is to consolidate INEEL wastes generated from cleanup actions under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at a single engineered facility.

The facility, known as the INEEL CERCLA Disposal Facility (ICDF), was selected as a remedy in the 1999 Record of Decision for the Idaho Nuclear Technology and Engineering Center (INTEC) to address site-wide soil contamination. This on-site disposal facility is designed to hold 510,000 cubic yards of waste. The Agencies are currently developing the operational procedures and constructing the facility.

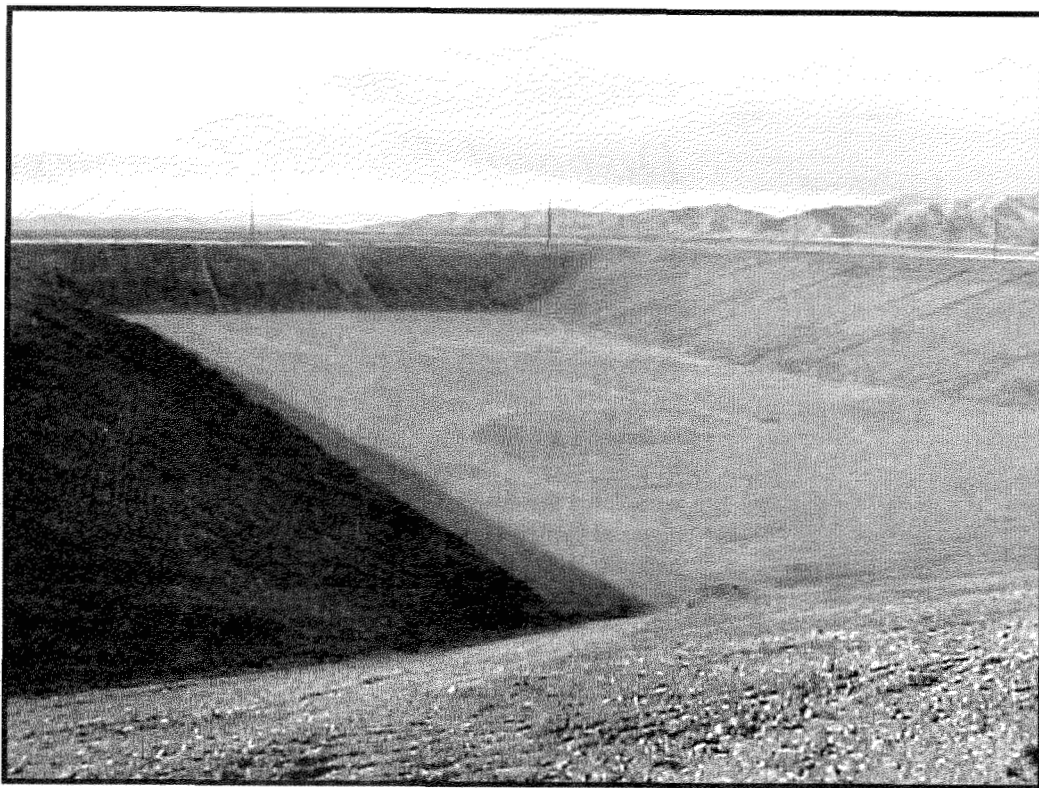


Idaho National Engineering and Environmental Laboratory



GA02-50444-02

# ICDF *Facts*



*Preparations for an ICDF landfill cell were completed last fall*

The ICDF Complex will not become operational until the procedures are finalized and the Agencies hold a public workshop.

This fact sheet discusses the design components of the ICDF, liner installation, cover components, general waste acceptance criteria, and schedule.

## **Design Components**

The ICDF Complex consists of staging and storage areas, an administrative facility, a weigh scale, and a decontamination and treatment facility referred to as SSSTF; along with a landfill and an evaporation pond. Waste will enter the Complex and will be treated, as necessary. If the waste meets the waste acceptance criteria for disposal, it will go to the landfill or the evaporation pond. Otherwise

the waste will be sent off-site for treatment and/or disposal. The evaporation pond has been designed to handle liquids that collect in the bottom of the landfill (called leachate). The landfill design is more protective than requirements of the Resource Conservation and Recovery Act (RCRA) Subtitle C for hazardous waste and the Toxic Substances Control Act (TSCA) for polychlorinated biphenyls (PCBs) that any similar commercial disposal facility is required to meet.



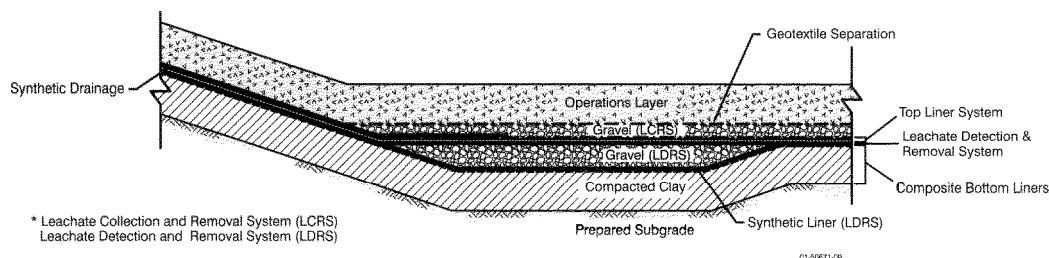
Idaho National Engineering and Environmental Laboratory



## Staging, Storage, Sizing, and Treatment Facility (SSSTF)

The role of the Staging, Storage, Sizing, and Treatment Facility is in part to handle the administrative functions for the ICDF Complex. In addition, waste coming into the facility may be treated to allow for disposal within the ICDF landfill or evaporation pond. The third function of the facility is to stage, store, and/or repack waste for off-site disposal. Wastes from INTEC and other CERCLA actions within the INEEL boundaries will be staged or stored during construction and operation of the ICDF Complex.

The Staging and Storage Annex, a temporary staging and storage area, has been incorporated into the ICDF



Cross-section of a landfill liner

Complex and is already located within the INTEC fenced area.

These facilities will serve to stage and store INEEL CERCLA waste designated for (1) direct disposal to the ICDF landfill or evaporation pond; (2) treatment; and/or (3) packaging in preparation for off-site disposal.

## Landfill

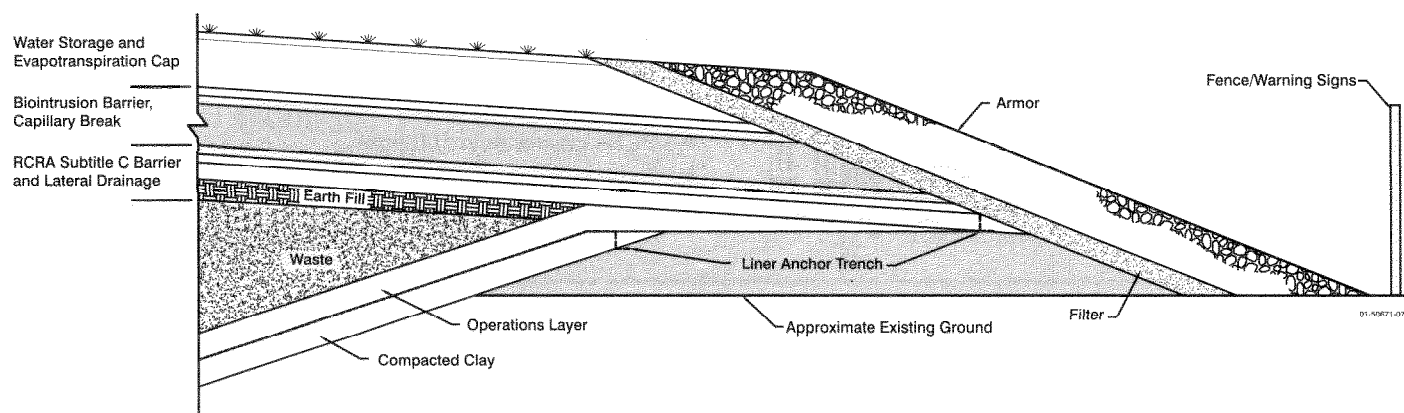
The landfill is designed to meet federal and state requirements for a toxic, hazardous, and radioactive

waste landfill. Very conservative assumptions were used in the design and modeling to ensure protection of the Snake River Plain Aquifer. For example, design features such as plastic liners were not considered in the modeling. Impacts to groundwater were modeled for a period of 1,000,000 years and the landfill was predicted to be protective of groundwater in the future.

The ICDF landfill is located in an area meeting hazardous waste, PCB waste, and low-level waste landfill siting requirements. The ICDF landfill exceeds the

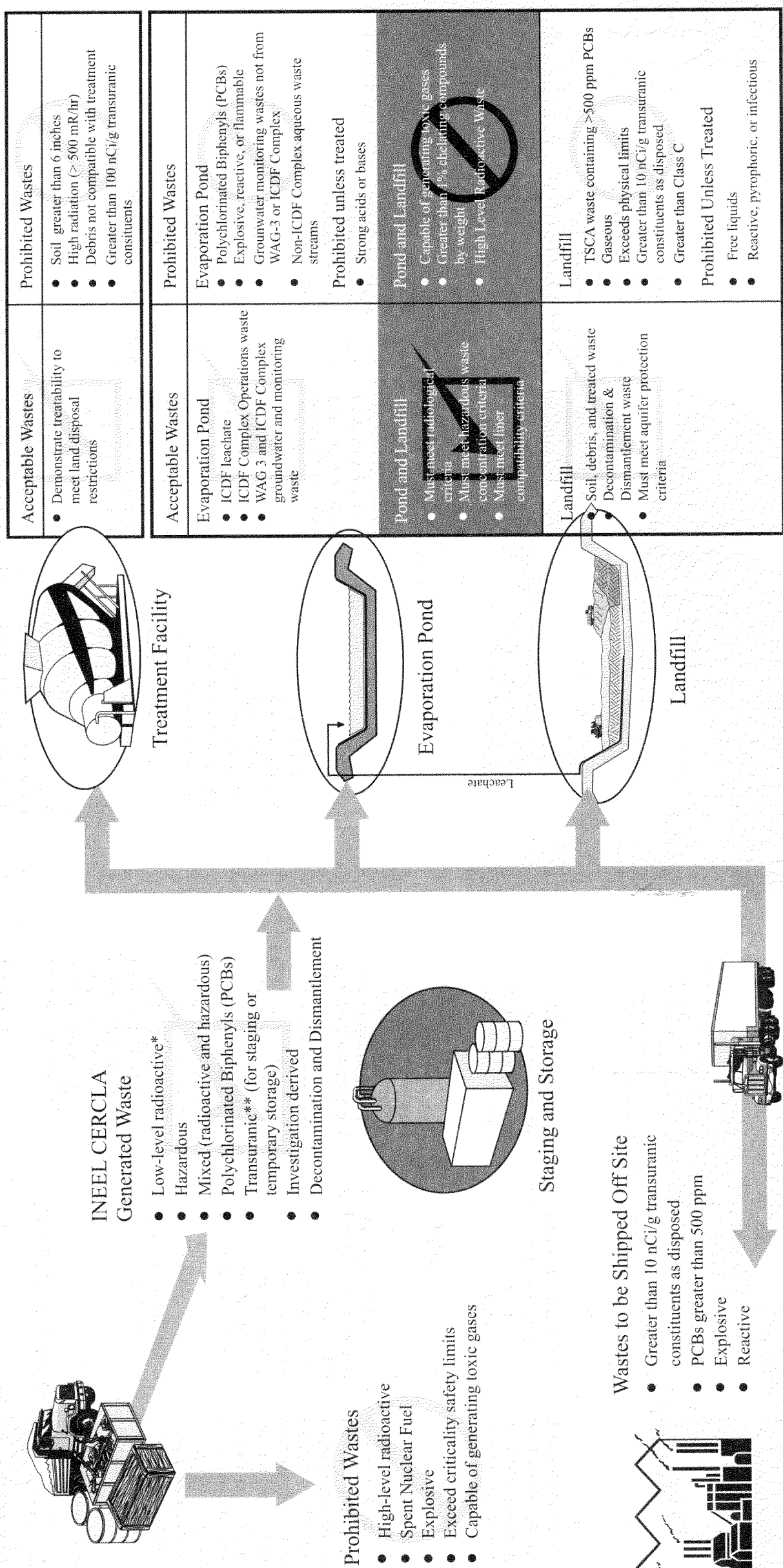
substantive RCRA Subtitle C location standards. Specific siting criteria for the location of the ICDF landfill included the following:

- Outside the 100-year flood plain
- Within the INTEC area of contamination
- Outside of wetland areas
- Not in active seismic zones
- Not in high surface erosion zones
- Not in an area of high historic groundwater.



ICDF cover and liner crest detail

## Acceptable and Prohibited Wastes for the ICDF Complex



\* Low-level radioactive waste: Waste that cannot be defined as high-level radioactive waste, spent nuclear fuel, transuranic (TRU) waste, by-product material, or naturally occurring radioactive material. Low-level waste may contain transuranic waste constituents with a concentration less than 100 nanocuries per gram (nCi/g).

\*\* Transuranic waste (TRU): Waste contaminated with more than 100 nanocuries per gram of alpha-emitting radionuclides of atomic number greater than 92 and half-lives greater than 20 years.

## Landfill Liners

The technical design incorporates requirements for the liner system and leachate collection and removal system. The liner system includes the following:

- A top liner constructed of clay sandwiched between plastic materials (called a geocomposite) to prevent the migration of hazardous constituents into the lower liner during the active life and post-closure care period.

- A composite bottom liner, consisting of at least two components. The upper component will be constructed of a plastic liner to prevent the migration of hazardous constituents into this component during the active life and post-closure care period. The lower component will be constructed of layers of clay materials to minimize the migration of hazardous constituents if a breach in the upper component occurs.

## Leachate Collection

The leachate collection and removal system immediately above the top liner will be constructed, operated, and maintained to collect and

remove liquids from the landfill during the active life and post-closure care period. A second leachate collection and removal system located between the liners and immediately above the bottom liner is also a leak detection system. This leak detection system will be capable of detecting, collecting, and removing leaks of hazardous constituents during the active life and post-closure care period. A third liner system under the sump area and constructed of plastic materials is included for additional protection of the aquifer.

## Evaporation Pond

The ICDF evaporation pond system will consist of two 2.2 million gallon cells that will contain the liquid wastes. The system will track the volume of waste disposed.

The evaporation pond will accept ICDF landfill leachate and secondary liquid wastes generated from waste processing and decontamination activities in the ICDF Complex. The evaporation pond will also accept CERCLA groundwater and monitoring wastes from INTEC and the ICDF Complex.

## Evaporation Pond Liner

The ICDF evaporation pond liner prevents migration of hazardous constituents and allows leak detection. The design includes an

operations layer and a composite liner system, consisting of three plastic liners and two geosynthetic clay layers (clay sandwiched between plastic liners) over a low permeability compacted soil base. The design of the ICDF evaporation pond lining system exceeds the requirements for a commercial disposal facility. Such steps are being taken to further protect the Snake River Plain Aquifer.

## Groundwater Monitoring

In addition to all the controls to prevent an environmental release, a groundwater monitoring network will be installed. The network has been developed to provide early warning if a release from the landfill or evaporation pond occurs.

## Landfill Cover

The landfill cover is designed as an infiltration limiting cover to minimize precipitation reaching the waste, thus reducing leachate generation and contaminant migration. Modeling predicts a very low

## Post-Closure Care

infiltration rate through the entire cover system. The expected low infiltration rate

is attributed to the design of the final cover, which will consist of three distinct functional elements: (1) the upper water storage component will provide water storage during wet periods for later release into the atmosphere during dry periods; (2) the middle bioinfiltration component will provide a drainage layer, protection from burrowing animals, and a capillary break; and (3) the lower

section will include a composite liner system that has a permeability less than or equal to the permeability of the landfill bottom liner to minimize infiltration into the waste.

The Agencies have an ongoing commitment to maintain institutional controls, monitoring, and maintenance indefinitely, regardless of changes in future land use. After closure, a buffer area will be established around the landfill to prevent future development.

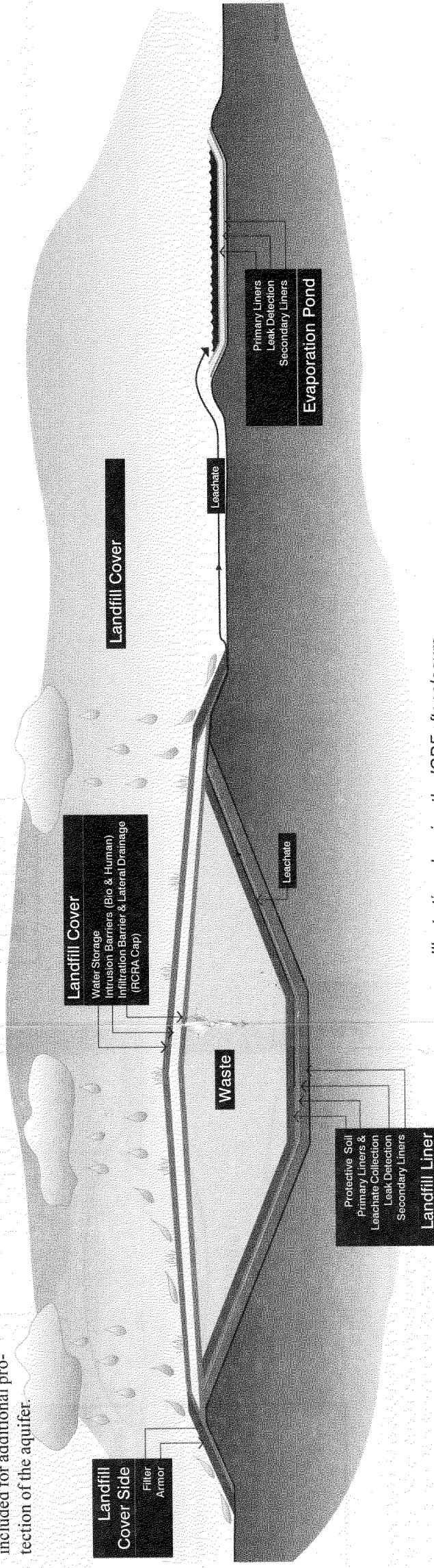


Illustration showing the ICDF after closure



## Project Schedule

Listed below are some key dates for the ICDF Complex:

- Begin Phase II construction of the ICDF landfill and SSSTF – May 2002
- Complete construction of the ICDF landfill and evaporation pond – December 2002
- Publish the Remedial Action Work Plan for the ICDF Complex – January 2003
- Complete construction of the SSSTF – March 2003
- Agencies inspection and walkthrough prior to

accepting wastes –  
March/April 2003

- Begin ICDF Complex operations – as soon as May 2003

## Public Involvement

Because this project has generated much public interest, the DOE, EPA, and State of Idaho have released two brochures and held two public workshops to discuss the 30-percent and 60-percent design of the facility. A workshop to discuss how the ICDF Complex will be managed and operated will be held this fall after the

development of the Remedial Action Work Plan and prior to the start of operations. The public will be notified via post cards and newspaper ads. Additional information is also available on the INEEL's Internet site at <http://www.inel.gov> or by accessing the Administrative Record/Information Repository site at <http://ar.inel.gov>.

GA02-50444-01

**INEEL Environmental Restoration Program**  
**MS 3206**  
**P.O. Box 1625**  
**Idaho Falls, ID 83415-3911**

*Address Service Requested*

PRESORT STD  
U.S. POSTAGE  
PAID  
IDAHO FALLS, ID  
PERMIT NO. 73